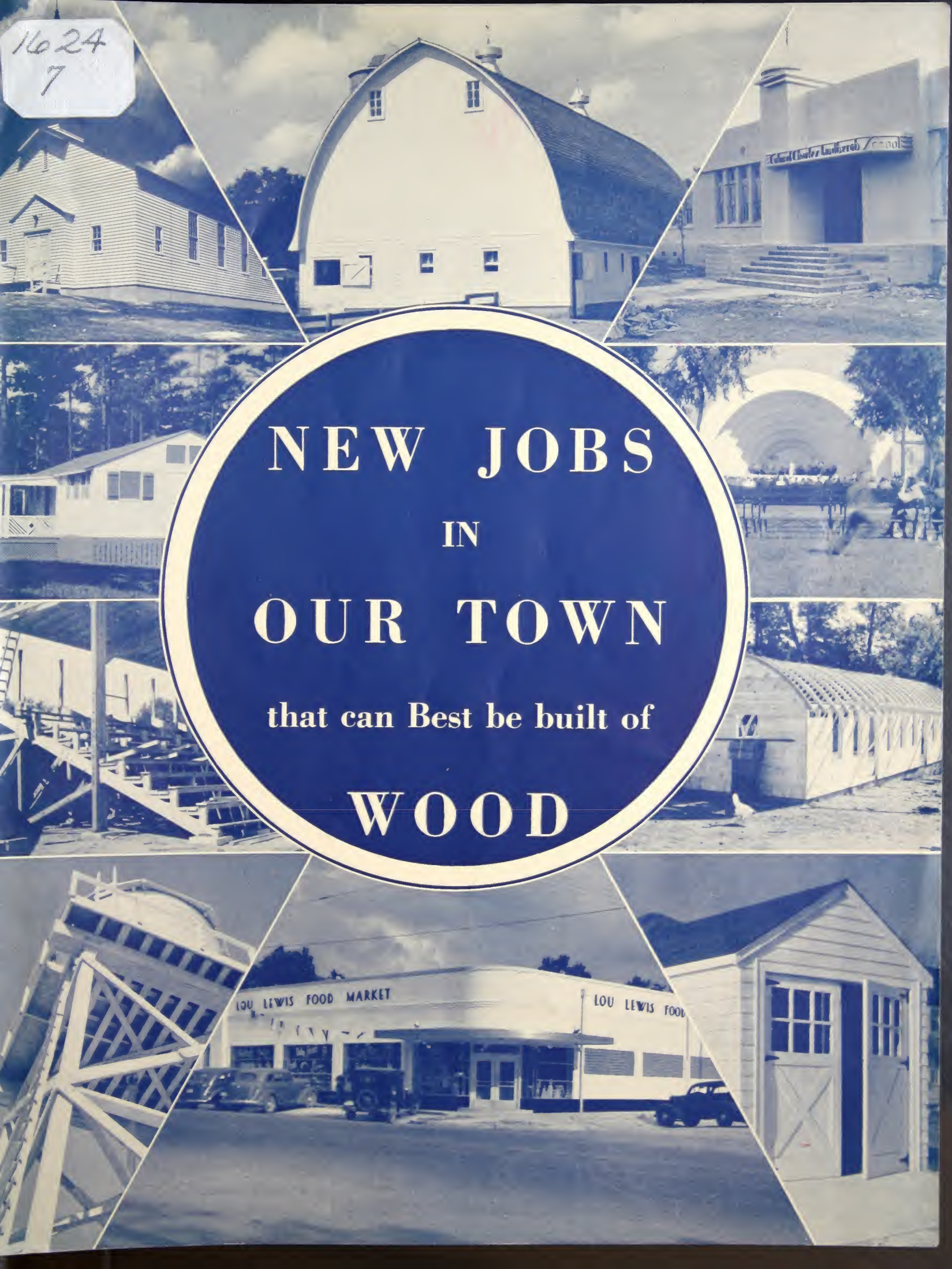
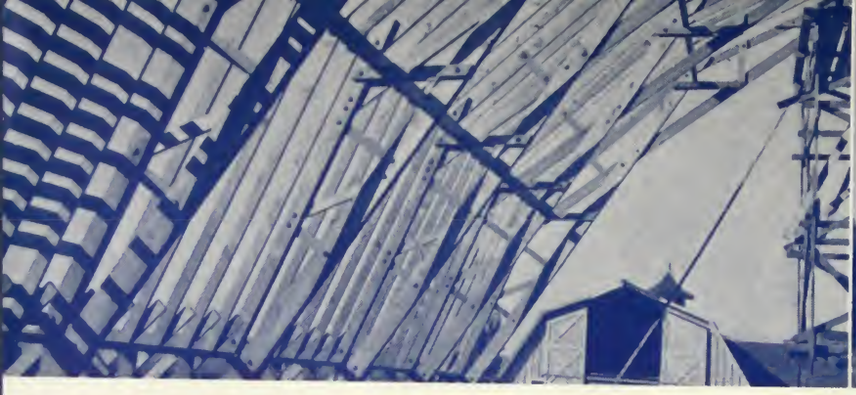



# NEW JOBS IN OUR TOWN that can Best be built of WOOD



# *A Message to Contractors:*

TIMBER trussed roofs, for such jobs as you see in this booklet, once were tasks for the specialist, the kind of work you would have to sublet or pass up entirely. They meant heavy timbers, special orders, and the like. Some lumber yards could not supply this material. It is to let you know that "them days are gone forever" that we present this booklet to you.

Today, you can do this work yourself, with your regular crews of skilled and unskilled workmen, just as some contractors all over the country have been doing at a good profit for several years. For the materials you can come to our yard as usual, and buy what you're accustomed to buying: the 2x4s, 2x6s—up to 2x12s for most of the work, with occasionally a little 3-inch stock, and once in a while the narrower widths of 4-inch stock.

**YOU Can**
**Do the Work**

**WE Can**
**Sell the Materials**

**LOOK! See**
**What Others Did**

The reason why we can handle these jobs here at home (you doing the contracting, and buying the timber from our yard stocks) is a set of technical improvements developed by lumber industry experts, starting with some good, workable ideas from abroad.

This new system of making timber trusses is one of the results. Everybody knows that wood is strong, and experience has taught you that wood, itself, is stronger than the joints you could make in commercial practice. That is why those heavy timbers had to be used wherever the load was heavy. There had to be room for all the bolts, nails, and notches that would be required. Only part of the strength of the wood could be used at the joint, which meant that you'd have to use more and heavier timber than you otherwise would require.

Look at the pictures in this booklet, which show typical structures built with the Teco Connector System. These connectors spread the load over a large part of the cross section of the wood instead of concentrating all of it in one place as a bolt would do. These connectors make most of the timber do its share of the work of holding up the load, with very little left to loaf on the job. That means your customer does not have to pay for any loafing timber. He gets greater value than ever from his timber trusses. You can install smaller pieces, stock sizes, the very stuff you're accustomed to using.

Many contractors have become acquainted with these Teco connectors by working on big defense jobs, where of course they are used as a matter of efficiency and economy. If you are not familiar with Teco Connectors, come in and learn more about them, and how simple they are to use. Let us show you some of the designs which have been prepared by the lumber industry's Timber Engineering Company—typical designs for typical buildings such as your customers and ours will require. If we need any expert help on how to handle this business, we can get it in a hurry from the Teco engineers in Washington.

Some materials may be difficult to obtain, especially now, but you can build these timber trusses in a hurry. We don't have to order this kind of lumber. We have it now.

# Where Others Have Used Yard Lumber and TECO Connectors

*Community Buildings*

School Buildings
School Gymnasiums
School Auditoriums
School Shop Buildings
Grandstands
Grandstand Roofs
Bleachers
Chapels
Churches
Post Offices
Park Shelters
Band Shells
Fire Stations
Park Pavilions
Armories

*Commercial Buildings*

Garages
Bowling Alleys
Arenas
Restaurants
Bakeries
Work Shops
Theatres
Packing Houses
Warehouses
Resort Hotels
Small Airplane Hangars

*Factories*

Millwork Plants
Pulp Plants
Lumber Mills
Steel Mills

**WE CAN BUILD THESE, TOO**

**Barns**
**Silos**
**Bins & Racks**
**Storage Sheds**
**Stores**
**Schools**
**Grandstands**
**Churches**
**Garages**
**Bowling Alleys**
**Restaurants**
**Scaffolding**
**Retaining Walls**
**Form Work**
**Govt. Projects**
**Tank Foundations**
**Signs**
**Towers**
**Park Shelters**
**Band Shells**
**Work Shops**
**Dance Halls**
**Skating Rinks**
**Theatres**
**Packing Houses**
**Loading Platforms**
**Ramps**
**Lumber Sheds**

*Farm and Market Buildings*

Farmers' Markets
Dairy Barns
Hay Storage Sheds
Stables
Machine Storage Sheds

*Government Projects*

USHA Housing
Defense Housing
Navy Subsistence Buildings
CCC Camp Buildings
NYA Shop Buildings
Mess Halls
Ice Plants
USO Buildings
NYA Dining Halls
NYA Resident Centers

Farm Bridges
Exhibit Buildings
Grain Storage Sheds
Farm Gates
Equipment Sheds

*Bridges*

Foot Bridges
Highway Bridges
Temporary Bridges
Railroad Bridges
Portable Bridges
Guard Rails
Sway Bracing
Falsework
Arch Centering
Continuous Stringers
Pipe Trestles

*Shipyards*

Mold Lofts
Shipyard Assembly Buildings
Shipyard Storage Buildings
Docks
Wharves
Piers
Loading Docks
Crane Supports
Pile Caps
Walking Beams
Pier Fenders
Coffer Dams
Pile Driver Frames
Form Work

*Other Buildings*

Ore Bins
Coal Tipples
Pipe Racks
Oil Derricks
Roundhouse Buildings
Plate Racks
Casing Racks
Poster Panels
Distillery Racks
Barrel Racks
Lookout Towers
Tank Towers
Migratory Camps
Transit Sheds
Repair Shops

## *Faster—Better—More Economical*

# WOOD CONSTRUCTION

*One of California's many wood framed, diagonal sheathed, earthquake resistant school buildings. Teco connectors were used to strengthen the framing.*

*A Washington, D. C., lumber and millwork company erected this building for its own use. The materials needed to build the 49' span trusses were taken from the regular retail stock. (Teco Typical Design No. 372)*

*A type of modern school building that any contractor can build. In this job, Teco connectors were used for attaching cross-member framing braces.*

*A panel built, portable house, to be used by tenant farmers, in which Teco split rings were used to strengthen the roof frame. (Teco Typical Design No. 323)*

*A hay shed erected near Washington, D. C., using Teco split rings in the frame construction. (Similar to Teco Typical Design No. 265)*

*Pure Oil Company portable storage building using 30' span pitched trusses, fabricated with 2" lumber stocked by local building material dealers. (Ask for Teco Typical Design No. 346)*

*A maintenance building using 40' span trusses, which were built with stock lumber carried by local building material dealers. (Typical Design No. 223)*

HERE in pictures is the story of the easiest, fastest and most economical method of construction offered to the building trade in many years. Every building illustrated was constructed with Teco connector joints. None of the workmen needed any special training that the members of your crew don't have. Every piece of lumber and hardware used could have been purchased at our yard.

*Interior of a garage built in Houston, Texas, using Teco connector type 43' span trusses. You can fabricate trusses like these in the shop and deliver the parts to the job ready to erect. (Teco Typical Design No. 291)*

*A storage building erected for the Florida Gold Citrus Corp., at Lake Alfred, Fla., using 46' span trusses similar to Teco Typical Design No. 224.*

*Workmen assembling section of a barrel rack, making ready to hoist it into position. Teco Typical Design No. 217 will show you how to build the most economical type of barrel rack.*


*Riteway Store, Houston, Texas. Modern timber trusses fit naturally into modern architecture. (Similar to Teco Typical Design No. 344)*

*Grandstands such as this can be erected quickly, easily and economically by using the Teco connector type of construction. Teco Typical Design No. 109.* *(See page 8)*

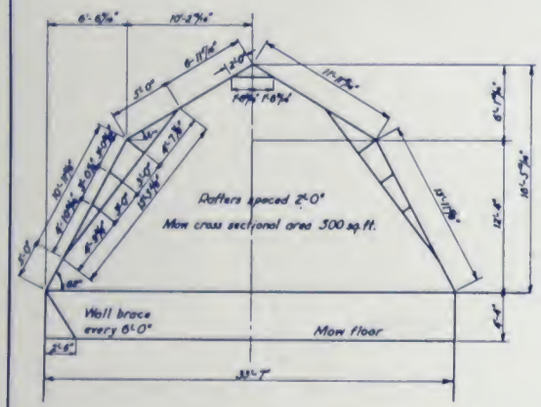
*A low-cost, easy-to-erect agricultural building in Crockett, Tex., that was built using the Teco system of construction. All materials and labor needed were available in the community. (Teco Typical Design No. 314)*

*A city park shelter house built in New Orleans, La., using short span timber connector roof trusses. Buildings similar to this (Teco Typical Design No. 263) can be used in many open-air gathering places.*

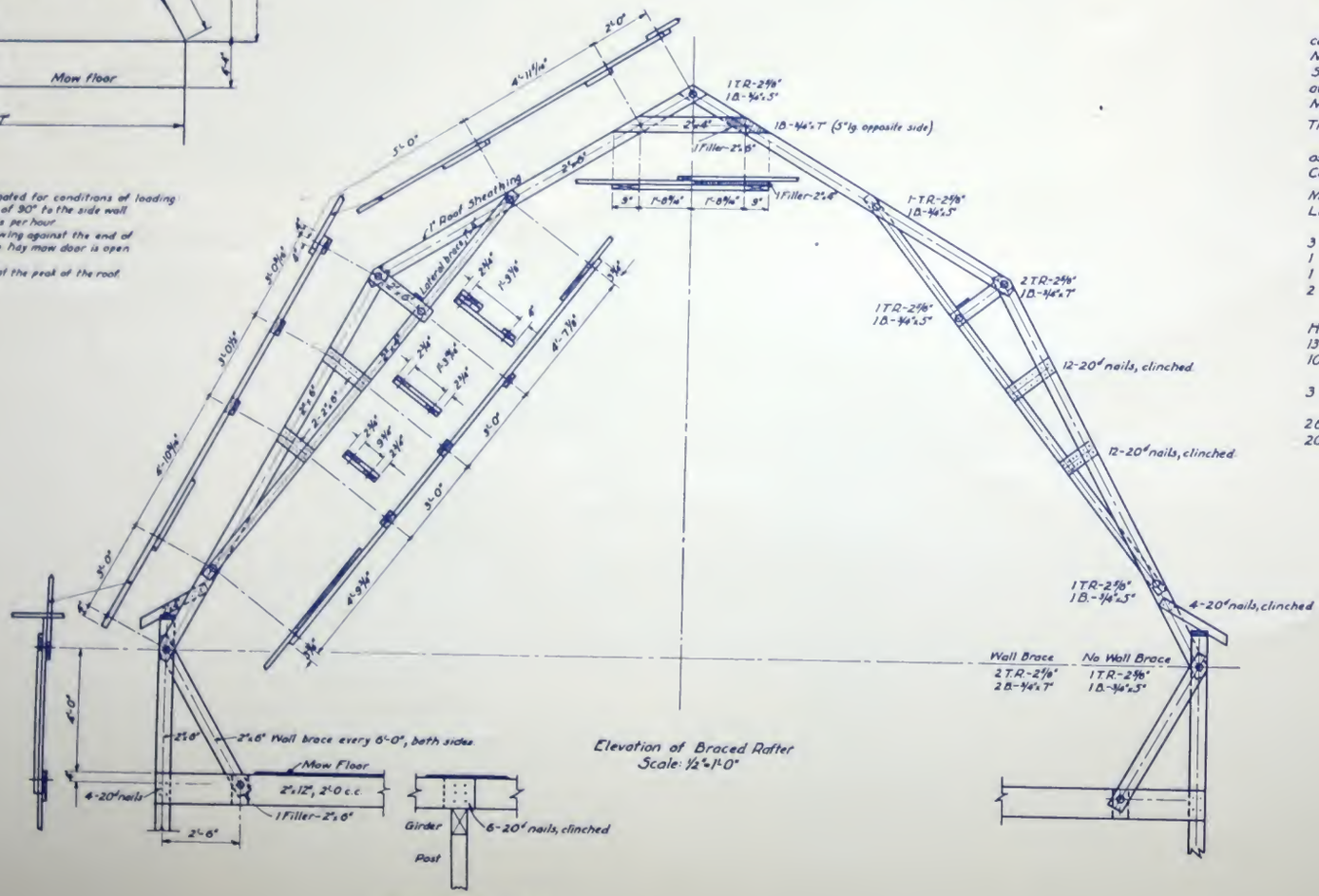
# More Barns—Bigger Barns—Better Barns

## *Teco Typical Design No. 216*

YOU can offer your farmer customer more barn for his money when you fabricate the trusses in the modern way. The same lumber footage will produce greater strength when you build strength into the joints. From our plans and instructions you can see how it's done. No special types of lumber are needed, and you use your regular working crew.




This design has been investigated for conditions of loading:
1. Wind blowing at an angle of 90° to the side wall with a velocity of 70 miles per hour.
2. Wind of same velocity blowing against the end of the barn where the large hay mow door is open into the wind.
3. Hay truck load of 1000# at the peak of the roof.




Elevation of Braced Rafter
Scale: ½"=1'-0"

Overlap Joint over Post

### NOTES

**LUMBER**

Lumber shall be of a structural grade with minimum allowable working stresses in pounds per sq. in. as follows:
880# Compression parallel to grain.
1,200# Extreme fiber in bending.
1,600,000# Modulus of elasticity.
Allowable unit working stresses for commercial grades are given in the attached N.L.M.A. leaflet "Working Stresses for Structural Lumber and Timber" or are available from the Regional Lumber Manufacturers Associations.

**TIMBER CONNECTORS**

Connectors shall be TECO toothed rings as manufactured by the Timber Engineering Company, Washington, D.C.

**MATERIALS LIST**

LUMBER (wall and wall brace above mow floor not included).

| | | | | |
|---|---|---|---|---|
| 3 | Pieces | 2"x6"x16'-0" | 48 | Ft. B.M. |
| 1 | " | 2"x6"x18'-0" | 18 | " |
| 1 | " | 2"x4"x12'-0" | 8 | " |
| 2 | " | 2"x4"x16'-0" | 22 | " |
| | | Total | 96 | Ft. B.M. |

**HARDWARE**

13 Toothed Rings - 2⅝"ϕ
10 Machine Bolts - ¾"x.5"
(6 when wall brace is used).
3 Machine Bolts - ¾"x.7"
(5 when wall brace is used).
26 Plate Washers - 3"x3"x⅛"
20d Nails as required.

*Typical design for use of Engineers and Architects.*

## GENERAL PURPOSE BARN

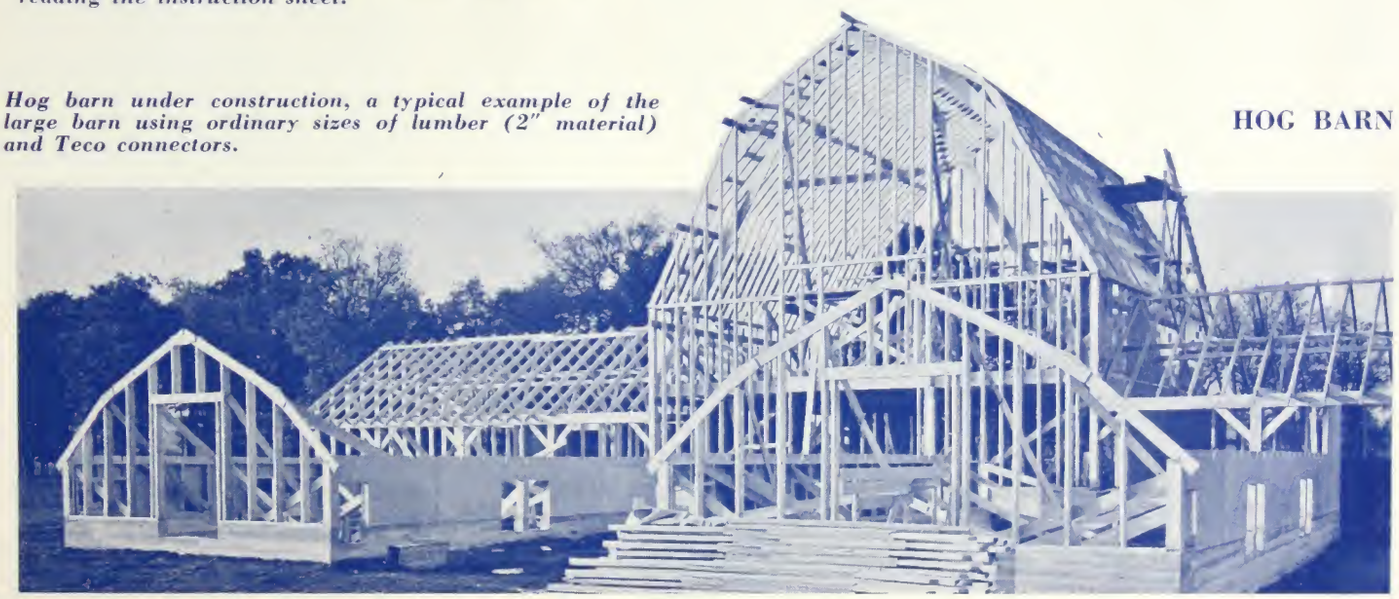
*A gambrel roof general purpose barn being erected near Goodville, Penna. No specially skilled labor is required to build a barn of this type. Installing Teco connectors is a simple process that any good mechanic can do merely by reading the instruction sheet.*

## DAIRY BARN

*A dairy barn built near Flemington, N. J., using Teco split rings in the roof trusses.*

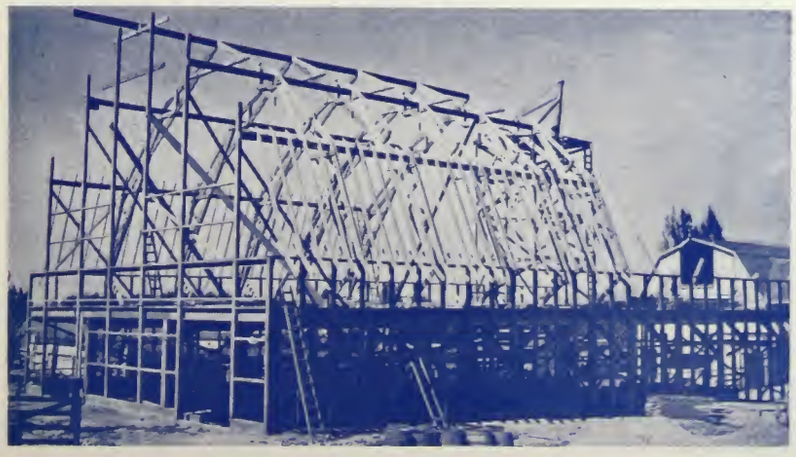
*Hog barn under construction, a typical example of the large barn using ordinary sizes of lumber (2" material) and Teco connectors.*

## HOG BARN



## CATTLE BARN

*Right: Detail of the roof trusses used in the cattle barn below.*



*This cattle barn built in Multnomah County, Oregon, used 2½-inch split rings in the joints. A design similar to the one illustrated on the opposite page was used. (Teco Typical Design No. 216)*

# Economy and Strength in School Buildings

## TECO TYPICAL DESIGN No. 39

THIS truss was originally designed for school buildings, and hundreds of them are in use for that purpose. But wherever you have a span of 20 to 40 feet for a roof, you will find this unit efficient and economical. Over a 40′ span, for example, the heaviest timber will be a 2x8, and you can space these trussed rafters 24 inches 0°. Consider the many building jobs where you could use this typical design. Timber, with Teco connectors, has been engineered to your kind of business and ours.

***Trussed rafters of 40′ span being fastened into position on a school building at Lulu, Ga. Local labor did the work, using regular yard stocks of 2x8" and smaller lumber. These trusses are similar to Teco typical design No. 39 shown below.***

LUMBER LISTS PER TRUSS

Knee Braces not included.

| | | |
|---|---|---|
| **SPAN-20′-0″** | | |
| 1 Piece | 2″x6″x16′-0″ | 16 Ft. B.M. |
| 1 " | 2″x6″x14′-0″ | 14 " |
| 4 " | 2″x4″x10′-0″ | 27 " |
| 1 " | 2″x4″x12′-0″ | 8 " |
| | Total- | 65 Ft. B.M. |
| **SPAN-24′-0″** | | |
| 1 Piece | 2″x6″x16′-0″ | 16 Ft. B.M. |
| 1 " | 2″x6″x18′-0″ | 18 " |
| 5 " | 2″x4″x12′-0″ | 40 " |
| | Total- | 74 Ft. B.M. |
| **SPAN-28′-0″** | | |
| 2 Pieces | 2″x6″x18′-0″ | 36 Ft. B.M. |
| 5 " | 2″x4″x14′-0″ | 47 " |
| | Total- | 83 Ft. B.M. |
| **SPAN-32′-0″** | | |
| 2 Pieces | 2″x6″x20′-0″ | 54 Ft. B.M. |
| 1 " | 2″x8″x2′-0″ | 3 " |
| 4 " | 2″x4″x16′-0″ | 43 " |
| 1 " | 2″x4″x12′-0″ | 8 " |
| | Total- | 108 Ft. B.M. |
| **SPAN-36′-0″** | | |
| 2 Pieces | 2″x8″x22′-0″ | 59 Ft. B.M. |
| 1 " | 2″x6″x2′-0″ | 3 " |
| 4 " | 2″x4″x18′-0″ | 48 " |
| 1 " | 2″x4″x12′-0″ | 8 " |
| | Total- | 118 Ft. B.M. |
| **SPAN-40′-0″** | | |
| 2 Pieces | 2″x8″x24′-0″ | 64 Ft. B.M. |
| 1 " | 2″x8″x2′-0″ | 3 " |
| 4 " | 2″x4″x20′-0″ | 54 " |
| 1 " | 2″x4″x12′-0″ | 8 " |
| | Total- | 129 Ft. B.M. |

NOTE:

In spans of 20′, 24′, and 28′, use 2″x6″ top chord and connection block, and all 2″ toothed rings and ½″ bolts. In spans of 32′, 36′, and 40′, use 2″x8″ top chord and connection block, and all 2½″ toothed rings and ⅝″ bolts. If necessary to splice top chord, use splice similar to one shown for lower chord, using splice plates of same size as top chord.

HARDWARE LISTS PER TRUSS

| 20′, 24′, 28′ Spans | 32′, 36′, 40′ Spans |
|---|---|
| 22 TECO Toothed Rings-2″ | 22 TECO Toothed Rings-2⅝″ |
| 14 Machine Bolts-½″x6″ | 14 Machine Bolts-⅝″x6″ |
| 2 " " ½″x4½″ | 2 " " ⅝″x4½″ |
| 2 Angles-4″x4″x¼″, 3″ long | 2 Angles-4″x4″x¼″, 3″ long. |
| 2 Lag Screws-½″x3″ | 2 Lag Screws-½″x3″ |
| 28 Plate Washers-2½″x2½″x⅛″ | 28 Plate Washers-2½″x2½″x⅛″ |

When Knee Brace is used.
Add -2-2″x4″
4 TR
2 B-4½″ long.
2 B-6″ long.

SPECIFICATIONS.

LUMBER (S4S)

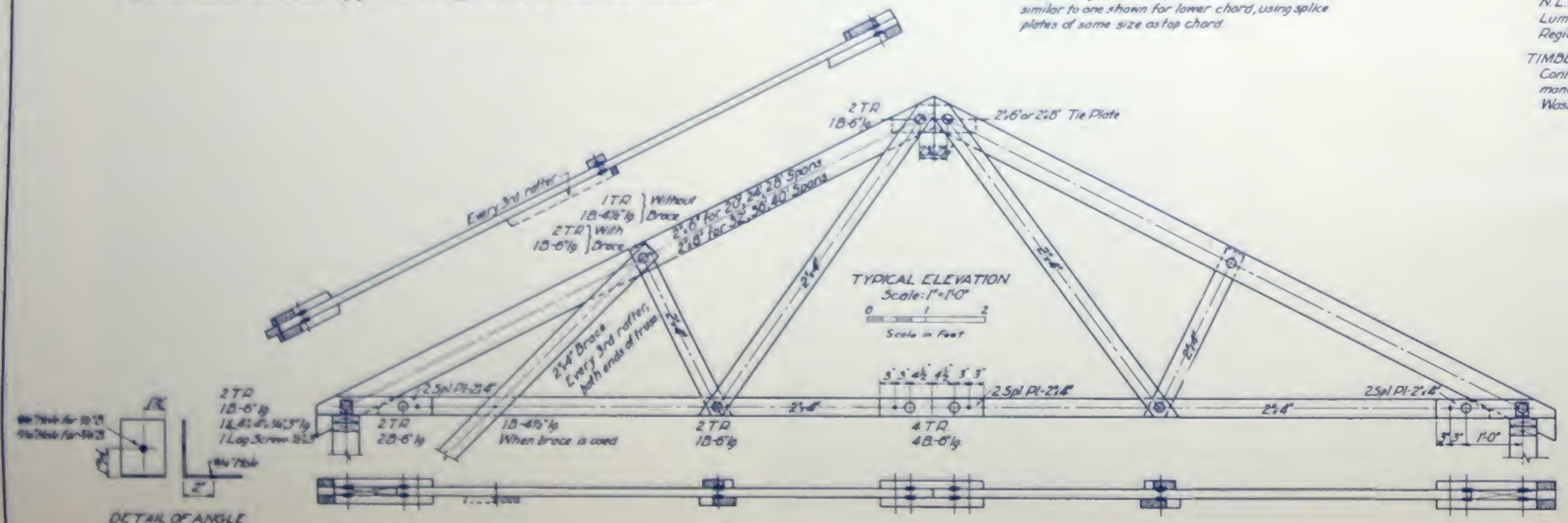
Lumber shall be of a structural grade with minimum allowable working stresses in pounds per sq. in. as follows:

880# Compression parallel to grain.
1,200# Extreme fiber in bending.
1,600,000# Modulus of elasticity.

Allowable unit working stresses for commercial grades of lumber are given in the attached N.L.M.A. leaflet "Working Stresses for Structural Lumber and Timber" or are available from the Regional Lumber Manufacturers Associations.

TIMBER CONNECTORS

Connectors shall be TECO toothed rings as manufactured by the Timber Engineering Company, Washington, D.C.




*Typical design for use of Engineers and Architects.*

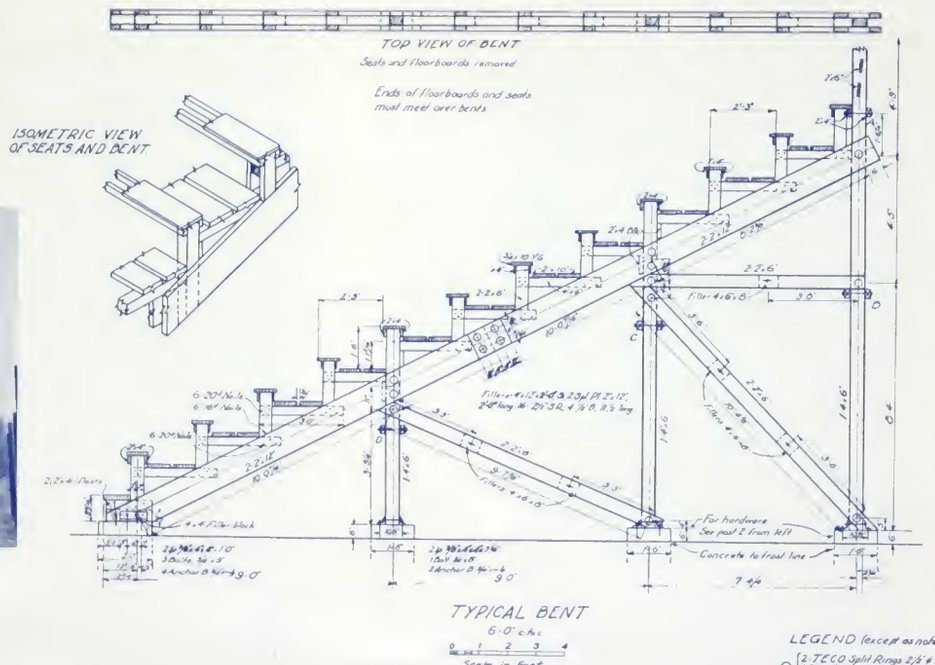
# GRANDSTANDS

## *Teco Typical Design No. 109*

A GRAND market, especially nowadays when our citizens have money and are willing for schools and communities to spend some of it. If they feel so flush they want to build a mighty stadium, you'll have to talk to the architect and engineer, but if they want you to put up just a grandstand at their athletic field, come in and talk to us. We can show you a design that is typical of a great many grandstands built in recent years. Thanks to the lumber industry's Teco connectors, all the materials for this grandstand can be found in our regular stocks. Except for the 4 x 4s and 4 x 6s for posts, all the rest of the material is 2 x 12″ or smaller. Your regular crew can do the work, and you may be assured that Teco engineers have designed a super-safe grandstand. It may be used either as a permanent structure, or demounted and reassembled with ease. Plans are available for a stand either with or without roof.

***Football grandstand, Washington High School, Atlanta, Ga. Local contractor with skilled and unskilled labor built this and other similar grandstands. All the lumber (2″ material) was available through the local yard. (Design similar to Teco Typical Design No. 109, below.)***

***Grandstand, Booker T. Washington High School, Atlanta, Ga. Teco connectors and 2″ lumber supplied by retail lumber dealers helped to build this structure. Locally available labor reduced construction costs to a minimum. (Design similar to Teco Typical Design No. 109, at right, and No. 109A for a roof design.)***




TYPICAL BENT
6'-0" c.to c.
Scale in Feet

NOTES

GENERAL-
This design has been prepared in accordance with proposed A.S.A. Spec.
Side Rails not Shown

LUMBER SPECIFICATIONS

Lumber shall be of a structural grade with the following allowable working stresses in lbs. per sq. in.
880# Compression parallel to grain
1200# Extreme fibre in bending
1600,000# Modulus of Elasticity
Allowable unit working stresses for commercial grades of lumber are given in the attached N.L.M.A. leaflet "Working Stresses for Structural Lumber and Timber" or are available from the Regional Lumber Manufacturers Associations.

TIMBER CONNECTORS

Connectors shall be TECO Split Rings as manufactured by the Timber Engineering Company, Washington, D.C.

MATERIAL LIST
(12 Ft. Section with Aisle at Center)

LUMBER S4S

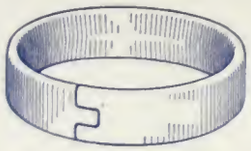
| | | | |
|---|---|---|---|
| 1 | Piece | 4"×12"×16'-0" | 64 Ft. B.M. |
| 33 | " | 2"×12"×16'-0" | 1056 " |
| 2 | " | 2"×12"×16'-0" | 64 " |
| 20 | " | 4"×6"×15'-0" | 720 " |
| 46 | " | 2"×10"×12'-0" | 920 " |
| 23 | " | 2"×10"×18'-0" | 690 " |
| 25 | " | ¾"×10"×12'-0" | 313 " |
| 23 | " | ¾"×10"×8'-0" | 192 " |
| 5 | " | 2"×8"×12'-0" | 80 " |
| 1 | " | 2"×8"×6'-0" | 8 " |
| 22 | " | 4"×4"×12'-0" | 352 " |
| 23 | " | 2"×6"×12'-0" | 276 " |
| 17 | " | 2"×6"×14'-0" | 238 " |
| 20 | " | 2"×6"×16'-0" | 320 " |
| 29 | " | 2"×4"×12'-0" | 232 " |
| 20 | " | 2"×4"×16'-0" | 214 " |
| 16 | " | 2"×4"×18'-0" | 192 " |
| 35 | " | 1"×4"×12'-0" | 140 " |
| 33 | " | 1"×4"×8'-0" | 88 " |
| | | Total = | 6159 Ft. B.M. |

HARDWARE

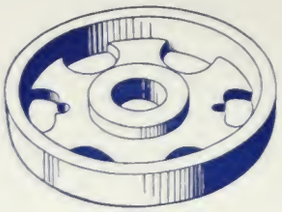
| | | |
|---|---|---|
| 480 | TECO Split Rings, | 2½" ø |
| 192 | Machine Bolts, | ⅝"×12½" |
| 80 | " | ⅝"×10" |
| 32 | " | ⅝"×11½" |
| 24 | " | ⅝"×8" |
| 24 | " | ⅝"×9" |
| 80 | Anchor Bolts | ¾"×— " |
| 608 | Plate Washers | 2"×2"×⅛" |
| 16d and 20d nails as required | | |
| 40 | Angles | 4"×6"×⅜", 3'-9" long |
| 16 | " | 4"×4"×⅜", 10'-0" long |

LEGEND (except as noted)
○ {2 TECO Split Rings 2½" ø, 1 Bolt ⅝"×2½", 2 Plate Washers 2"×2"×⅛"
• Nails of appropriate size
⊸ {1 Bolt ⅞"×10½", 2 Plate Washers 2"×2"×⅛"

Typical design for use of Engineers and Architects



*Split Ring*
Pat.



*Malleable Iron Shear Plate*
Pat.

# *The How and Why of*

TECO Timber Connectors are devices for increasing the strength of the joints in timber construction. They are placed between adjacent faces of overlapping timbers to develop the full working stresses of the lumber. The connectors accomplish their purpose by providing a large area for the surrounding timber to bear against. This eliminates the small bearing area provided by a bolt, and enables the stresses to be distributed over practically the entire cross section of the timbers involved. Connectors hold the timbers in place much more firmly and rigidly than bolts and nails and permit use of lumber in economical sizes. The connectors are placed in the timber in precut grooves or through pressure embedment.


*1. Splice joint for lower chord of truss with members temporarily nailed together while boring bolt holes. Care must be taken to plumb the drill. The drill guide shown is a simple method to keep drill in line. Numbers on members assist when reassembling the joint after grooving.*

*2. Cutting Split Ring Grooves. Joint members are laid apart for grooving operation in contact faces. Bolt holes act as guides for pilot. A ⅝" electric drill is recommended for cutting 4" split ring grooves.*


*3. Split Rings inserted in grooves as joint is assembled.*

### *Teco Connectors Are Better, Save Money*

The value and efficiency of connectors lie in these facts:

1. They transmit large loads between members without seriously reducing the cross-sectional area of the members joined.

2. They permit the use of structural quality lumber in small sizes.

3. They reduce the amount of hardware required—fewer bolts, rods, washers, etc.

4. They can be easily installed.

5. They are inexpensive.

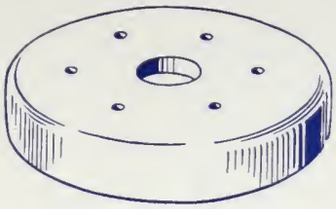
6. They are well suited either to factory fabrication or on-the-job fabrication of the building parts, and the erection is economical.

### *Three Types of Connectors*

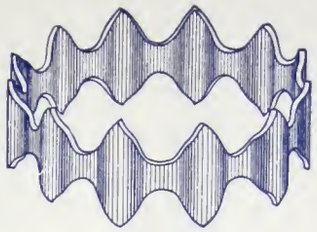
At the top of these pages are shown the types of connectors most commonly used in short span timber roof trusses, namely: split rings, toothed rings, and shear plates.

The split ring is used for wood-to-wood connections and is applicable to all types of timber trusses. It is placed in pre-cut grooves in adjacent timber surfaces and the members are held together with

# of TECO *Connectors*



*Pressed Steel Shear Plate*
Pat.



*Toothed Ring*
Pat.

bolts. It is easily installed and is most economical to use when power is available for the fabrication. Page 10 illustrates the proper fabrication method when split rings are used. The method is a simple one, and, with reasonable care, any contractor or builder with his usual skilled and unskilled labor can get a completely satisfactory job.

### *When Power Is Not Available*

The toothed ring is very similar to the split ring from the use standpoint but requires embedment under pressure. The toothed ring carries slightly less load and only when power is not available is this connector recommended. Because of its smaller load-carrying capacity it is used extensively on lighter trusses, such as trussed rafters and barn trusses. Page 11 illustrates the proper fabrication and assembly method when toothed rings are used. The equipment shown in the pictures can be used to embed the connectors, or a hydraulic jack or clamp can be used equally as well.

### *For Wood-to-Steel Connection*

The shear plate is also placed in a pre-cut groove and is primarily intended for wood-to-steel connections. The shear plate has been devised to eliminate crushing of the timber surface under the bolt, thereby developing the full shearing value of the bolt itself. They are used to tie the trusses to the building wall and to anchor timber columns to foundations. A pair of these devices may also be used back to back for wood-to-wood connections and this is advisable when the structure needs to be portable and demountable. The shear plate has its own special grooving tool but is installed by following the same procedure as is shown for the split rings.

◆

**Teco Connectors and Engineering Service Are Supplied by**


**TIMBER ENGINEERING CO.**

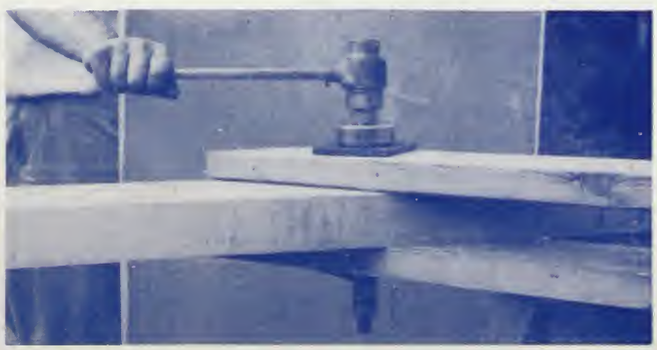
***Subsidiary of National Lumber Manufacturers Association***

**1337 Connecticut Avenue**

**WASHINGTON, D. C.**


*1. Bolt hole being bored in members of a lumber joint to be assembled with Toothed Rings. Members held temporarily in place by nails.*

*2. After the holes are bored, the members are lifted apart and the joint assembled with a high-strength rod, oversize plate washers and a ball-bearing washer. Toothed Rings are placed between overlapped faces. Acme threads on the rod and nut provide speed and efficiency in drawing the joint together.*



*3. Joint completely drawn together with Toothed Rings embedded. The high-strength rod is next removed and replaced with an ordinary machine bolt and suitable washers.*

# Don't Let It Scare You . . .

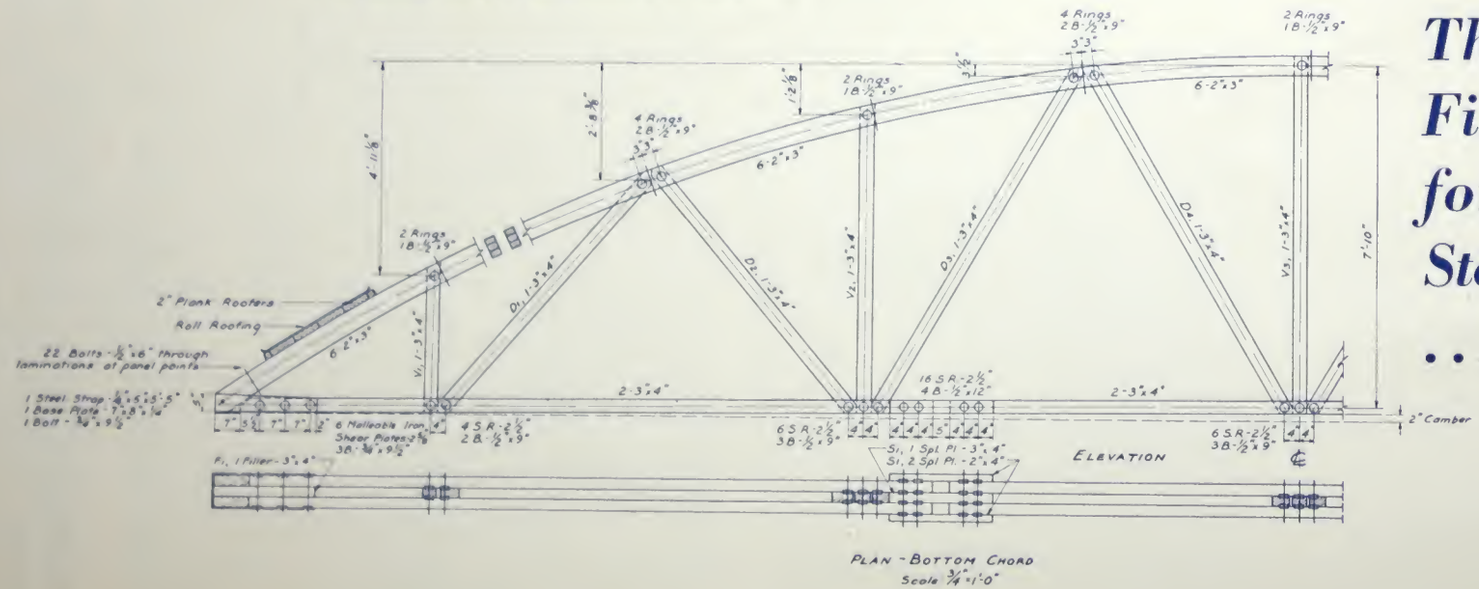
*This was one contractor's first experience with Teco construction, and his customer saved about $900 for the six bowstring trusses, 60' span, by using timber instead of the material originally specified for this super market in Helena, Mont.*

. . . just because it's big. All the materials for these 60' bowstring trusses came out of a Montana lumber dealer's regular stocks, and the local contractor had never worked with Teco connectors before. But, we are informed, he "had no trouble at all," for the lumber dealer was able to get all the expert help he needed at the start. We can do as much or more for you, can supply you with all the expert advice you need. We can call on the lumber industry's staff of engineers in Washington, the Timber Engineering Co. You may be surprised at what your workmen can do with timber in buildings when you give them Teco connectors and the usual sizes of lumber they're accustomed to handling.

MATERIALS LIST PER TRUSS

| Lumber (S4S) | | | | | | |
|---|---|---|---|---|---|---|
| Memb. | Size | Length | Note | Cut From | Order | F.B.M. |
| Top Chord | 2"x3" | 32'0" | | Material from 2"x12" | | 160 |
| Bottom Chord | 3"x4" | 16'-0" | 6 | 16'-0" | 6 | 96 |
| V1 | 3"x4" | 3'-6" | 2 | 16'-0" | 2 | 32 |
| V2 | 3"x4" | 7'-0" | 2 | 14'-0" | 1 | 14 |
| V3 | 3"x4" | 8'-2" | 1 | 10'-0" | 1 | 10 |
| D1 | 3"x4" | 7'-5" | 2 | 16'-0" | 1 | 16 |
| D2 | 3"x4" | 7'-5" | 2 | 16'-0" | 1 | 16 |
| D3 | 3"x4" | 9'-3" | 2 | See V1 | | |
| D4 | 3"x4" | 9'-3" | 2 | 12'-0" | 2 | 24 |
| F1 | 3"x4" | 2'-4½" | 2 | See V1 | | |
| S1 | 3"x4" | 2'-5" | 2 | See D4 | | |
| S1 | 2"x4" | 2'-5" | 4 | 10'-0" | 1 | 7 |
| | | | | | Total | 375 |

| Hardware | | |
|---|---|---|
| No. | Item | Size |
| 84 | Split Rings | 2½" ø |
| 12 | Mall. Iron Sh. Pl. | 2⅝" ø |
| 22 | Machine Bolts | ½"x6" |
| 26 | " " | ½"x9" |
| 8 | " " | ½"x12" |
| 8 | " " | ¾"x9½" |
| 112 | Cut Washers | 1⅜" ø |
| 2 | Steel Straps | ¼"x5"x5'-5" |
| 2 | Base Plates | 7"x8"x¼" |
| Glue & nails as required | | |




PLAN - BOTTOM CHORD
Scale ¾"=1'-0"

# These are Fine Trusses for Garages . . Stores . . Sheds . . Auditoriums

**TECO TYPICAL DESIGN NO. 267**

*Typical design for use of architects and engineers*

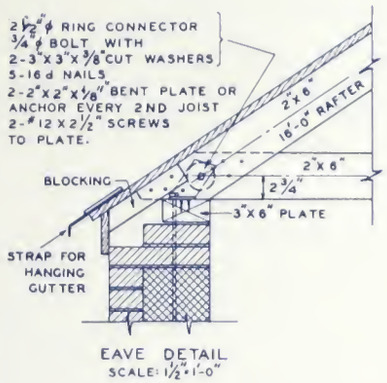
# A NEW STRUCTURAL UNIT—
## *Here's What You Can Do with It*

### *Teco Typical Design No. 157*

HERE is a by-product of the new construction practices that had to be developed for large-scale government housing projects, which is sure to be useful to contractors in a great many other types of buildings. It is a trussed rafter, and the men on the projects find that spacing of 24″ OC is close enough, instead of the usual 16″. Furthermore, by using Teco connectors at the tension points (eaves and splicing) the sidewalls carry the entire weight of the roof with no bearing partitions required—this with 2x6s over a 26′ span. Assemble the rafter on the ground, raise it into place when ready for it, space it, and you're ready for the roof boards. This construction is easy, fast, and economical, and the government builders have used thousands of them. We might give you a few suggestions on their use but you likely won't need any; you'll find plenty of places you can use this idea. You will probably make many variations of it, once you get acquainted with Teco connectors.

*The 28′ span trussed rafters, ready to be hoisted into place, at the Sunnydale Housing Project, San Francisco, Cal., were made from standard length 2x6″ lumber. The design used for these trussed rafters can be applied to many other small buildings.*

*The local lumber yard was able to furnish the 2″ material required to build the 26′ span trussed rafters used in this housing project at Miami, Fla.*




EAVE DETAIL
SCALE: 1½″=1′-0″


OPTIONAL DETAIL
FOR CEILING CONSTRUCTION




TRUSSED RAFTER
SCALE: ¾″=1-0
SPACING: 23½″ O.C. FOR 1200# f GRADE LUMBER

TABLE OF LOADS

| | | |
|---|---|---|
| DEAD LOAD | | |
| ROOF | | |
| SLATE SHINGLES | 9# | |
| SHEATHING | 3# | |
| JOISTS | 3# | |
| | 15x1.2=18# | |
| CEILING | | |
| PLASTER | 12# | |
| JOISTS | 3# | |
| INSULATION | 2# | |
| | 17 | = 17# |
| LIVE LOAD | | 30# |
| TOTAL (HORIZ. PROJ.) | | 65#/0′ |

RING CONNECTORS

SPLIT-RING TIMBER CONNECTORS SHALL BE MANUFACTURED FROM HOT ROLLED, LOW CARBON STEEL CONFORMING TO A.S.T.M. STANDARD SPECIFICATIONS FOR CARBON STEEL A 17-29, TYPE A, GRADE 1. EACH RING SHALL FORM A CLOSED TRUE CIRCLE WITH AN OUTSIDE CYLINDRICAL SURFACE PARALLEL TO THE AXIS OF THE RING. THE INSIDE SURFACE SHALL BE BEVELED FROM THE MEDIAN LINE TOWARD THE EDGES. IT SHALL BE CUT THROUGH IN ONE PLACE IN ITS CIRCUMFERENCE TO FORM A TONGUE AND SLOT. SPLIT-RINGS SHALL CONFORM TO THOSE MANUFACTURED BY THE TIMBER ENG. CO., WASH., D.C.: DIAMETER 2-1/2″, THICKNESS OF METAL-CENTER .163″, EDGE .143″, AND DEPTH 3/4″.

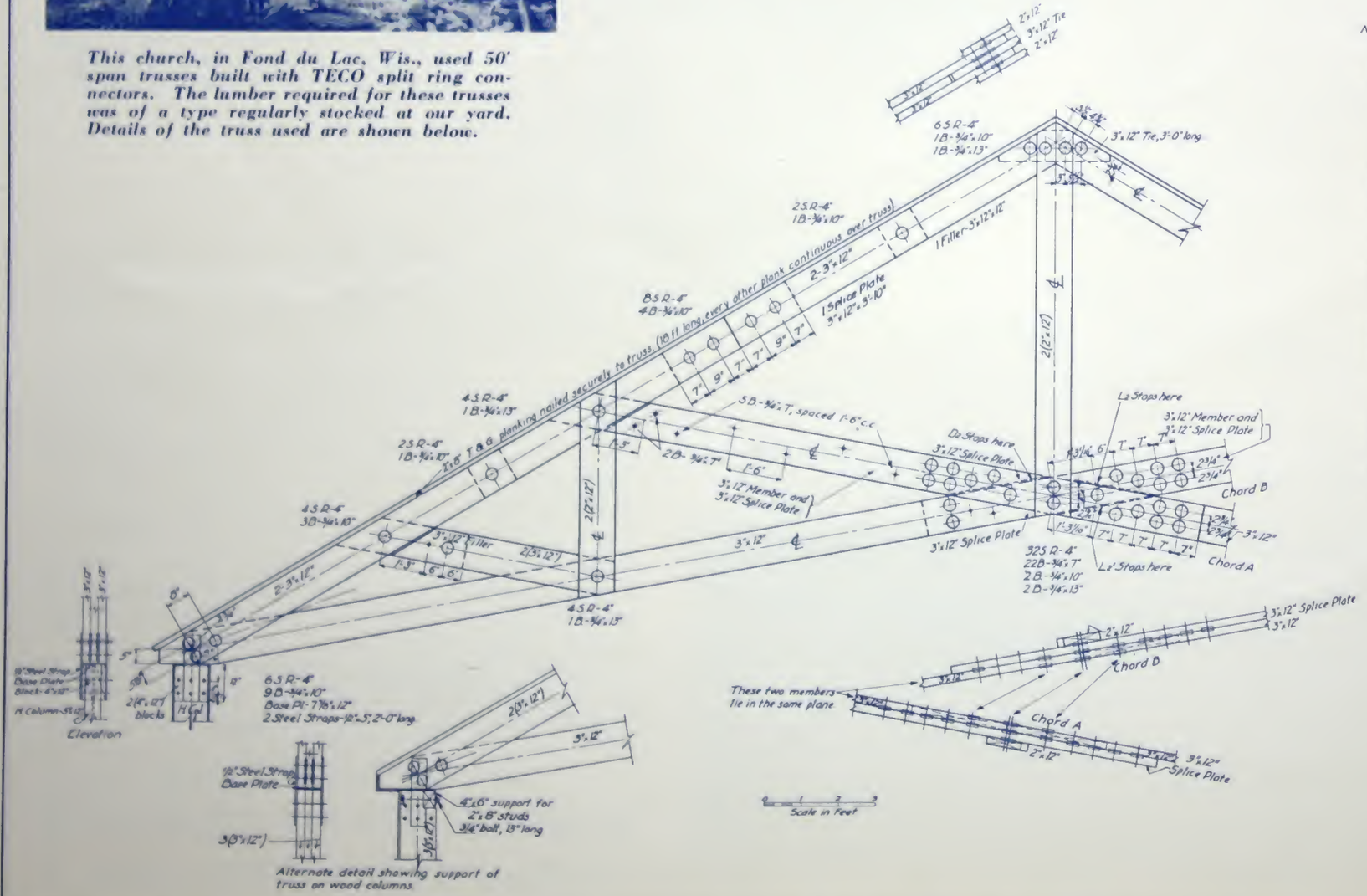
NOTE:
CEILING JOISTS MAY BE SPLICED AS SHOWN OR FURNISHED IN ONE 26′-0″ LENGTH

# Wood for Churches, Always . . .

## *Teco Typical Design No. 206*

CHURCH architecture naturally means wooden beams, to the extent that when metal trusses are used they are likely to be boxed in to imitate wood. With Teco connectors, though, you can build genuine wood trusses, and do it attractively, efficiently, and economically.

***This church, in Fond du Lac, Wis., used 50′ span trusses built with TECO split ring connectors. The lumber required for these trusses was of a type regularly stocked at our yard. Details of the truss used are shown below.***




NOTES

LUMBER SPECIFICATIONS.

Lumber shall be of a structural grade with minimum allowable working stresses in pounds per sq. in. as follows:

1200# Compression parallel to grain.
1600# Extreme fiber in bending
1,600,000# Modulus of elasticity.

Allowable unit working stresses for commercial grades are given in the attached N. L. M. A. leaflet "Working Stresses for Structural Lumber and Timber" or are available from the Regional Lumber Manufacturers Associations.

SPLIT RING CONNECTORS.

Connectors shall be TECO split rings as manufactured by the Timber Engineering Company, Washington, D.C.

MATERIALS LIST

Lumber per truss ($45)

| | | | |
|---|---|---|---|
| 4 Pieces | 2"x12"-12'-0" | 96 Ft B.M. | |
| 2 " | 3"x12"x28'-0" | 168 | " |
| 6 " | 3"x12"x12'-0" | 216 | " |
| 8 " | 3"x12"x18'-0" | 432 | " |
| | | Total 912 Ft.B.M. | |

Hardware per truss.

104 Split Rings - 4" ⌀
36 Machine Bolts - ¾"x7"
28 " " ¾"x10"
8 " " ¾"x13"
136 Plate Washers - 3"x3"x3/16"

Hardware required for attaching truss to columns not listed.

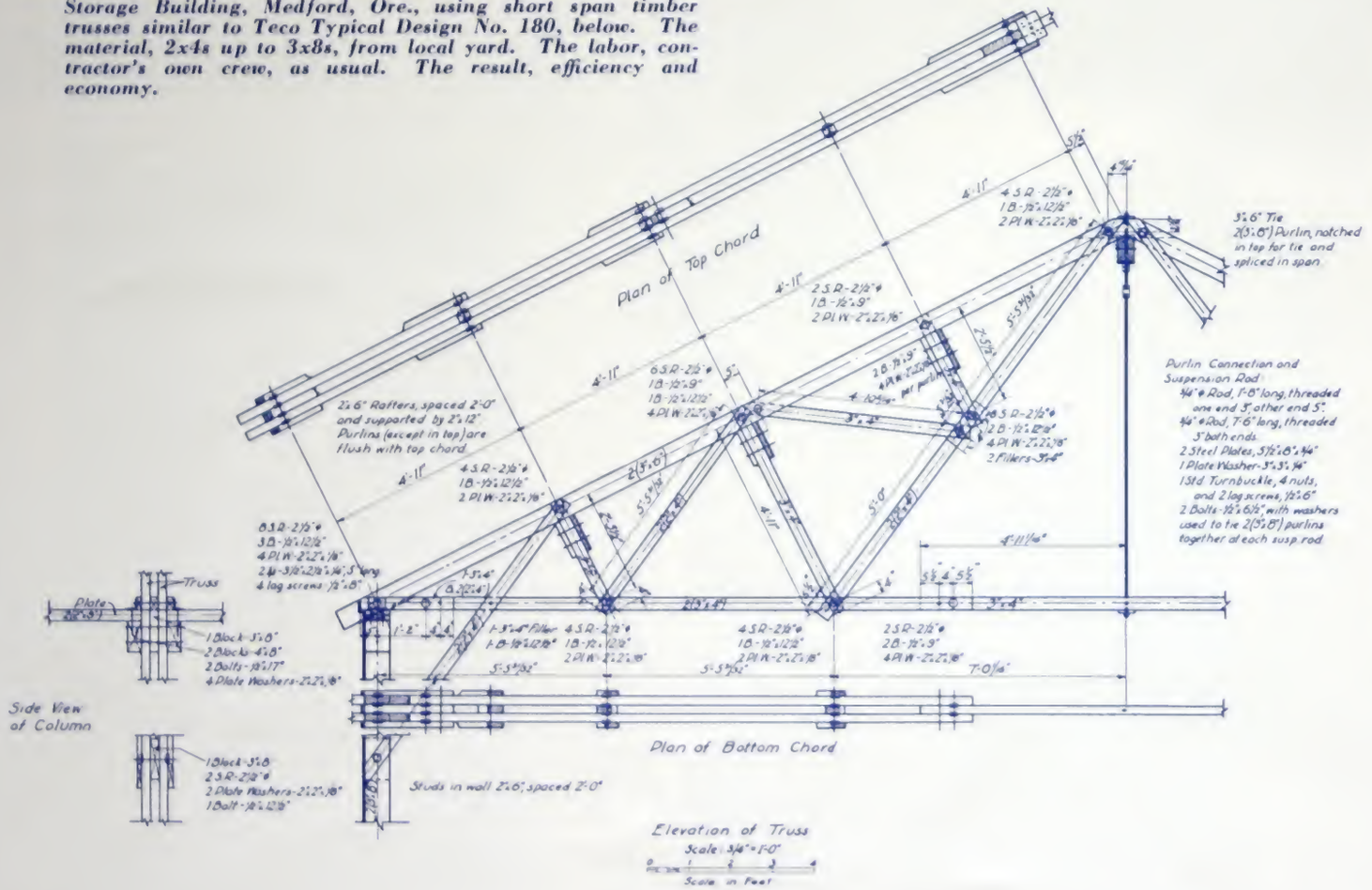
Typical design for use of Engineers and Architects.

# Storage Sheds in a Hurry—Everywhere

### *Teco Typical Design No. 180*

CONTRACTORS throughout the country find that they can build storage sheds, warehouses and similar structures, quickly and easily, using the Teco system of construction. Local labor, and materials from the local retail lumber yard, are used. Call on us for further information on this construction the next time you are figuring on a building of this type.

***Storage Building, Medford, Ore., using short span timber trusses similar to Teco Typical Design No. 180, below. The material, 2x4s up to 3x8s, from local yard. The labor, contractor's own crew, as usual. The result, efficiency and economy.***




NOTES:

LUMBER SPECIFICATIONS

Lumber shall be of a structural grade with minimum allowable working stresses in pounds per sq. in. as follows:

1000# Compression parallel to grain.
1200# Extreme fiber in bending.
1,500,000# Modulus of elasticity.

Allowable unit working stresses for commercial grades are given in the attached N.L.M.A. leaflet "Working Stresses for Structural Lumber and Timber" or are available from the Regional Lumber Manufacturers Associations.

MATERIALS LIST PER TRUSS

Lumber

| | | | |
|---|---|---|---|
| 7 Pieces | 2"x4"x12'-0" | 56 Ft. B.M. | |
| 2 " | 2"x4"x18'-0" | 24 " | |
| 6 " | 3"x6"x14'-0" | 84 " | |
| 1 " | 3"x4"x26'-0" | 26 " | |
| 3 " | 3"x6"x22'-0" | 99 " | |
| 1 " | 3"x8"x24'-0" | 36 " | Total- 325 Ft.B.M. |

Hardware

| | |
|---|---|
| 88 Split Rings | 2 1/2" ø |
| 6 Machine Bolts | 1/2"x9" |
| 24 " | 1/2"x12 1/2" |
| 4 Angles | 3 1/2"x2 1/2"x1/4"-5" long |
| 8 Lag Screws | 1/2"x8" |
| 2 " | 1/2"x6" |
| 1 Steel Rod | 3/4" ø, 1'-8" long, thr. 3" & 5" |
| 1 " | 3/4" ø, 7'-6" long, thr. 3"-2 ends |
| 1 Standard Turnbuckle & 4 nuts for 1/2" rods | |
| 2 Steel Plates | 5 1/2"x8"x3/4" |
| 1 Plate Washer | 3"x3"x1/4" |
| 56 " | 2"x2"x3/8" |

Lumber and hardware in purlins and columns not listed.

SPLIT RING CONNECTORS.

Connectors shall be TECO split rings as manufactured by the Timber Engineering Company, Washington, D.C.

*Typical design for use of Engineers and Architects.*

# Your Customer Gets More for His Money the TECO Way

YOU can get jobs like these if you show your prospects that you not only give them the most modern design, but also the newest and most economical method of construction. Show them how they save money on materials. Teco short span trusses can be built with lumber regularly stocked at our yard. The Teco connector type of construction is faster, saving money in labor costs. Fabricating, assembling and installing Teco short span trusses doesn't require special skills, and your regular crew can do it.

*A bowstring truss, fabricated at the Rock Island Lumber Co. yard at Albert Lea, Minn., being hauled to the building site. This type of short span truss, sometimes prefabricated at the lumber yard, is being used in garages, storage sheds, etc. (Teco Typical Design No. 267)*

*An Army chapel, typical of those being built in almost every Army camp in the country, that can be altered slightly to fit the requirements of almost any community. (Teco Typical Design No. 310)*

*Interior of a Safeway Store built in Washington, D. C., showing the roof trusses built with Teco connector joints. The lumber needed for this type of construction is stocked by our yard. (Teco Typical Design No. 344)*

*Workmen preparing to hoist the roof trusses into place at a Safeway Store job in San Francisco, Cal. Trusses of this type can be fabricated and assembled at the building site, using lumber stocked at our yard. (Teco Typical Design No. 329)*

*This brooder house shows that modern glued laminated construction is applicable to small as well as large farm buildings.*

Here are some more buildings that have been constructed with Teco connector joints in roof trusses or framing. Several of these probably will be built in this area in the near future. Why not be prepared when you get a chance to sell your services by getting information on Teco connector type structures? If you have a specific job in mind drop in to see us. If we can't tell you what you want to know, the Timber Engineering Company can.

*The 26′ span trussed rafters used in the construction of this building, in the 62nd Street Housing Project, Miami, Fla., have been used successfully in many Government housing jobs and other small buildings. (Teco Typical Design No. 157)*

*Constructing an Army mess hall, using Teco connectors in the roof trusses. (Teco Typical Design No. 179)*

*Car shed being built for an Automobile Agency in Albany, New York. The cantilever trusses were constructed with Teco toothed rings in the joints. (Teco Typical Design No. 205)*

*Left—A Farmers' Market built in Pensacola, Fla., using Teco connector joints in the roof trusses. (Similar to Teco Typical Design No. 78)*

*Below—Grandstand roof trusses, Union High School, Klamath Falls, Ore. Numerous grandstands similar to this design (Teco Typical Design No. 109-A) have been built.*

*Short span timber connector trusses on the County Garage, Hoffman, Minn. These simple trusses are easily built by carpenters if they use Teco connectors. (Teco Typical Design No. 39)*

# *Termite Protection—Positive and Easy*

MOST contractors know (now that the first mad "scare" of the bugs is past) that it is easy enough to prevent termite attack in any building. All one needs to do is to insert at the bottom of the wood part of the structure a metal shield which is so shaped that subterranean termites cannot pass through or around it, between the wood and the ground. Except in the tropics, practically all the termite damage is caused by subterranean termites, and these insects will die within a very short time unless they can have frequent access to the ground and its moisture. Anything that contains cellulose (including library books) they will devour if they can, but whatever they eat must be so situated that they can commute back and forth between their food and their underground home. They will build little tunnels or "shelter tubes" over and around such obstacles as they cannot go through.

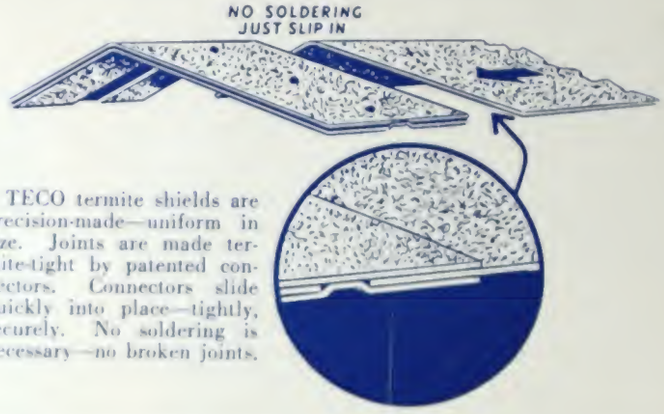
To block their entrance the metal "termite shield" is interposed at the top of the foundation, and if every possible point of contact between structure and earth is protected in this manner it is safe to guarantee that that building will suffer no damage from termites so long as the shield remains in place and unbroken.

### *There's a Catch to It*

There must be no cracks nor holes in this shield, however, and no poorly fitted joints between the strips of metal, now nor in the future. For although termites are blind, they do get around; and they are so small that it does not require much of an opening for them to crawl through. The only worthwhile shield protection against termites is perfect protection, or as near perfect as human ingenuity can conceive, and that is why the design skill of the Timber Engineering Company staff was set to work on the job.

The goal set for them was to devise a system of termite protection which any good mechanic could install in any new structure that is built according to accepted construction practices. In other words it must be adaptable to practically any wall and corner arrangement, and must be assembled easily and simply so as to make it inexpensive from the labor standpoint. The price of the shields must be reasonable, and it must be easy to figure out what to buy for any job.

**Key to Life-Long Protection, Quick Installation — the Teco Slip-On Connector**




TECO termite shields are precision-made—uniform in size. Joints are made termite-tight by patented connectors. Connectors slide quickly into place—tightly, securely. No soldering is necessary—no broken joints.

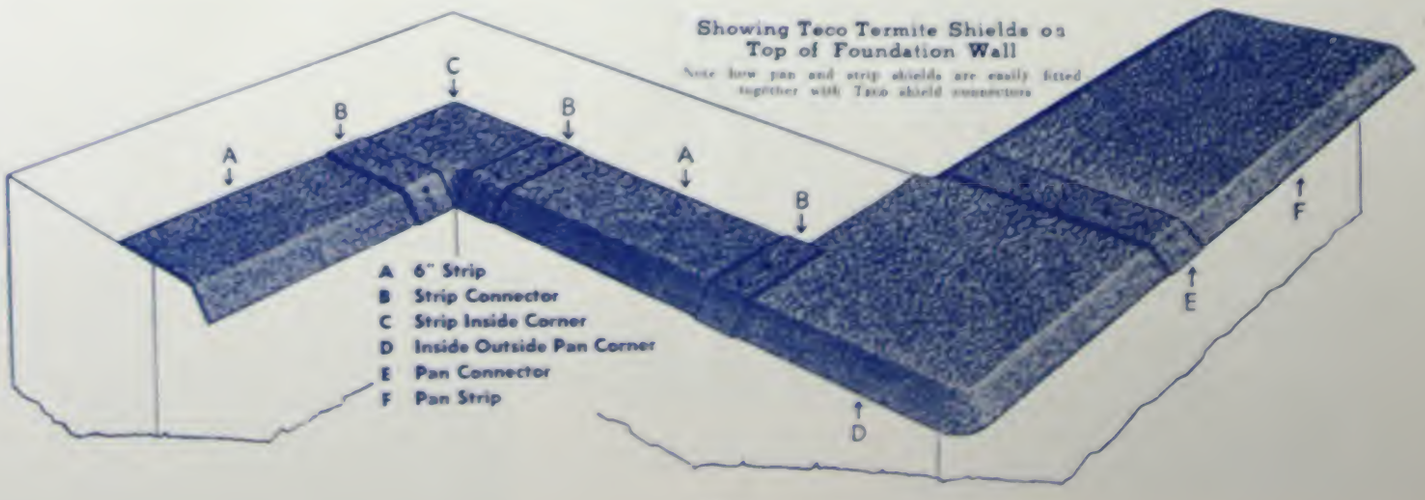
Most particularly, however, the protection must really protect. There must be no ragged edges, no wavy lines, no open joints, and no reliance upon solder to maintain tight joints because the solder joint fails when temperature changes expand or contract the two surfaces.

### *Designed for Convenience, Built to Last*

Teco termite shields take the uncertainties and clumsiness out of termite protection. They really protect, and they are designed for the greatest ease of installation in the building. They are not ordinary sheet metal but 26-gauge, copper-bearing steel, corrosion resistant in itself and further protected by zinc-coating with the hot-dipped process. This

**Showing Teco Termite Shields on Top of Foundation Wall**

Note how pan and strip shields are easily fitted together with Teco shield connectors



assures many years of trouble-free use, and even greater durability is offered by the use of 16 oz. copper, which is available in Teco shields on special order only.

This exceptionally durable metal is matched by the cleverness of design and the smoothness of manufacture. Teco Termite Shields are not cut out on shears, but die-pressed, the sort of finished production one naturally expects of a carefully engineered design.

### *Joints Slip Together, Stay There*

It is in the joints where this expert planning shows up most strongly. No solder is needed, no time is wasted in trying to make them fit (because they slip together easily), but they stay joined regardless of expansion and contraction of the steel as temperatures change. The sketch on page 18 shows why and how this can be done.

Patented Teco Connectors, standard in shape and size to fit the other standardized sections, provide "pockets" of exactly the right size to accommodate a strip or corner in either side. Even though there may be some slight movement within this pocket, as the temperatures vary, there will never be enough to leave any slightest open space.

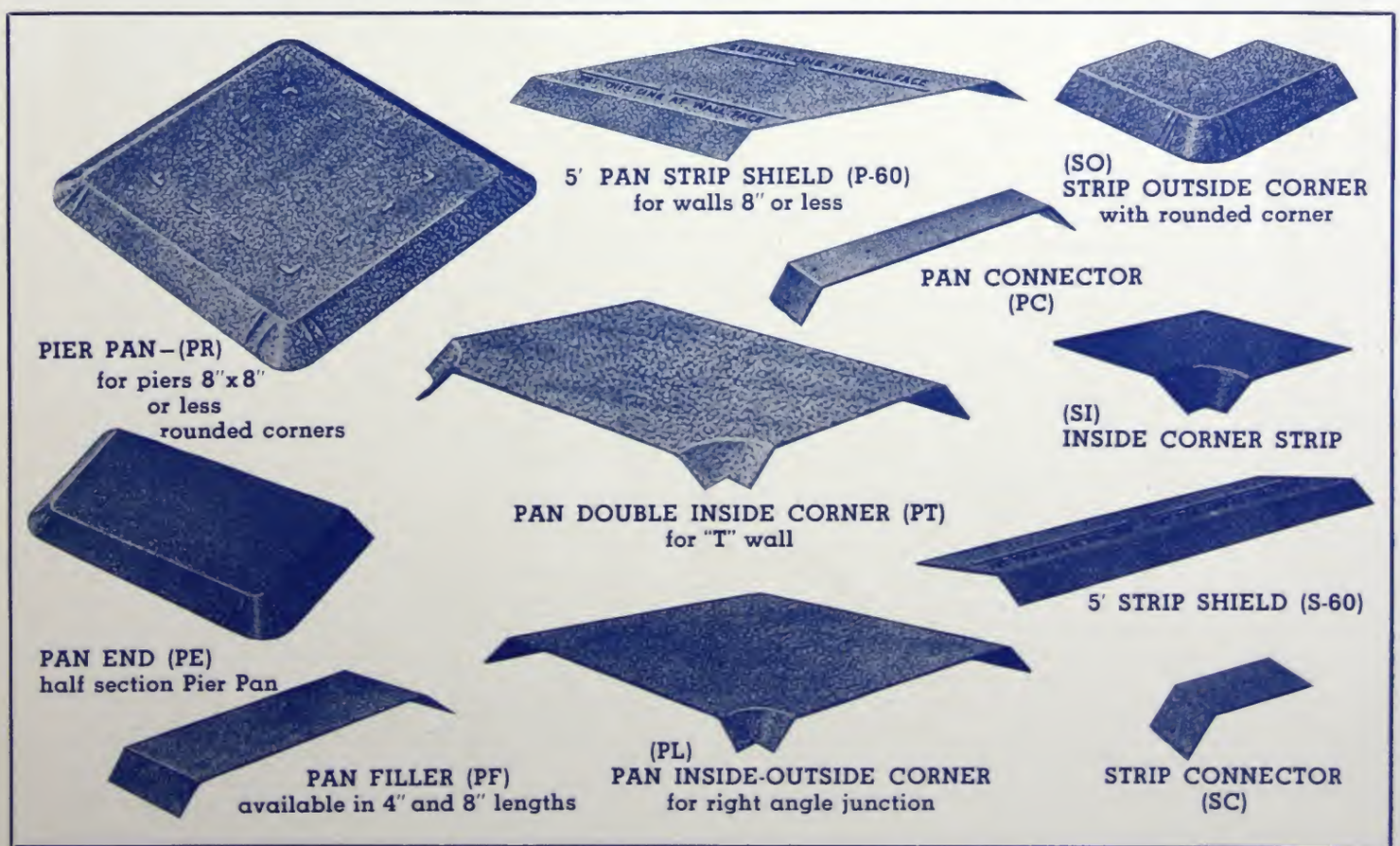
### *Standard Items*

The illustrations show how these Teco shields are arranged in standard patterns and sizes, each of which is shipped in standard packages. In determining which pattern is required it is only necessary to consider whether both surfaces of the wall must be protected against termite traffic. Safest, of course, is to have the metal canopy extending out from the top of every masonry wall on both sides, throughout. This is not always necessary, however, where one face of the wall can be *and will be* inspected occasionally, as on the interior side of a basement wall where no cupboards or other equipment will obstruct the view, and where the wall itself is either solid or well capped. For such installations a 6″ strip is used.

### *Labor-Saving, Money-Saving*

Whichever type of Teco shield is specified, you will find it easy to obtain in the size you require, and most economical to apply. Your workmen will waste no time in trying to fit varying patterns, for each Teco section slips quickly into its connector and in a few minutes the building is protected against subterranean termites.

## TECO STANDARD TERMITE SHIELDS — PAN AND STRIP TYPE



# SAFETY OF TIMBER

PERHAPS the most prominent facts in the minds of laymen concerned with the relative fire safety of timber and other construction materials are that wood burns and some of the others do not. The actual performance of timber and other structural materials exposed to fire is seldom considered further. A review of facts, however, resulting from fires in timber structures and structures of other materials indicates that other factors than that of combustibility are equally, if not more, important.

## Fire Hazards In Structures

In structures such as hangars, shops, garages, warehouses, etc., the fire hazard is not due to any appreciable extent to the structural material itself, but to the contents or to external conditions to which the building is exposed. It is the nature of the contents which determines the rate of fire spread, once a fire is started. Where the contents are highly inflammable, fires generally spread through an entire building within a few minutes and temperature builds up rapidly. Where metal trusses are used, buildings are frequently rendered unsafe almost immediately because of the possible collapse of the unprotected metal.

Contrast this with structures built of timber. An outstanding example of the fire safety value of a lumber-built airplane hangar equipped with sprinklers was demonstrated at the U. S. Bureau of Standards. Seventeen fire tests consumed 40 army airplanes and hundreds of gallons of gasoline and oil. After the final fire test, in which four planes were placed in the hangar with tanks filled with 360 gallons of gasoline and 40 gallons of oil, and 15 gallons of gasoline spilled on the floor and ignited, the hangar was still in excellent condition, there being only two lightly charred places on the wood-sheathed walls and roof.

In a six-story warehouse fire at Tacoma, Washington, the fire raged for nearly four hours and in spite of the fact that fire broke out on three floors by following up an elevator shaft, no failures occurred either in the wood laminated floors or in the heavy timber supporting columns and stringers. In almost the entire building the original timbers were subsequently covered over and permitted to remain in use.

## Time to Failure

Based on standard fire temperatures of the American Society for Testing Materials tests of building materials, a temperature of 1100° F. is reached within six minutes. At this temperature certain structural metals have less than ½ of their normal tensile strength, and at 1700° F. they will not support the dead weight of a structure. Where there are highly combustible and volatile contents, such as oils, paints, lacquers, and certain processes, the fire may be a "flash" type and reach maximum temperatures of 2000-2500° F. in a few seconds, which will cause unprotected metal to collapse so quickly as to preclude the possibility of fighting the fire advantageously.

Wood will burn, but it loses its strength only in proportion to the degree of charring under fire temperatures. Penetration tests on wood exposed to standard fire temperatures show that in general wood chars and burns at the rate of about one inch in depth in 33 minutes. Based on the size of the members in the structures and a safety factor of 4 for the timbers, the actual failure time may be roughly computed for exposure to standard fire temperatures. For example, it is not unreasonable to expect that a tension member may have approximately three-fourths of its section charred before the stress in its remaining section is such that the timber might be expected to fail. Where timber joints are assembled with modern timber connectors, these may be expected to carry the load as long or longer than the chord members, due to the fact that the connectors are insulated from the heat and continue to carry most of their load even though the wood around the bolts may be charred by conducted heat. The higher the hazard or degree of combustibility of contents, the greater the relative fire safety of timber construction as compared to materials which may fail quickly under sudden and high temperatures.

## Salvage Value

A fire in a building with unprotected metal trusses usually results in a twisted mass, requiring considerable expense in clearing it away. In contrast, damaged timber trusses are often repairable in place, or are readily dismantled with common labor, and unburned timbers are salvageable.

Trusses of other materials than timber, when falling, almost invariably pull over the side walls, while wood trusses generally cause no such damage when the walls are of brick or masonry construction.

## Insurance Rates

While insurance rates may vary for different localities, heavy timber construction is generally recognized as having a much more favorable fire insurance rate than unprotected metal. Timber construction, sprinklered, is considered an exceptionally good fire risk and carries a proportionately low rate—in some instances it is the lowest obtainable.

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